Cambridge IGCSE

Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

6301430793

GEOGRAPHY **0460/41**

Paper 4 Alternative to Coursework **October/November 2019**

1 hour 30 minutes

Candidates answer on the Question Paper.

Additional Materials: Calculator
Protractor
Ruler

READ THESE INSTRUCTIONS FIRST

Write your centre number, candidate number and name in the spaces provided.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Write your answer to each question in the space provided.
If additional space is required, you should use the lined pages at the end of the booklet. The question number(s) must be clearly shown.

Answer **all** questions.

The Insert contains Figs. 1.1, 1.2, 1.3, 1.4 and 1.7 and Tables 1.1, 1.2 and 1.3 for Question 1, and Fig. 2.1 and Tables 2.1 and 2.2 for Question 2.
The Insert is **not** required by the Examiner.
Sketch maps and diagrams should be drawn whenever they serve to illustrate an answer.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

This syllabus is regulated for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate

This document consists of **15** printed pages, **1** blank page and **1** Insert.

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1 A class of students investigated a local high technology industrial area. They wanted to find out about the companies located there.

(a) The high technology industrial area is shown in Figs. 1.1 and 1.2 (Insert). The photograph in Fig. 1.1 shows the area in 2006 and the map in Fig. 1.2 shows it in 2016.

(i) Identify **two** buildings **in different areas** which have been constructed since 2006.

Building number .....

Building number ..... [2]

(ii) What is the number of the building labelled **X** on Fig. 1.1?

Building number ..... [1]

(iii) Figs. 1.3 and 1.4 (Insert) are photographs which show views of this industrial area. Describe **three** features of the industrial area shown in Figs. 1.3 and 1.4.

1 .....

.....

2 .....

.....

3 .....

..... [3]

The students identified the following hypotheses:

Hypothesis 1: *The sectors (types) of high technology industry in the area changed between 2006 and 2016.*

Hypothesis 2: *High technology companies employ a highly skilled workforce.*

(b) To investigate **Hypothesis 1** the students did a survey of the companies which occupied some of the buildings shown in Fig. 1.2 (Insert). They wanted to find out what sector of high technology industry the companies were involved in.

(i) Companies involved in the bio-medical sector are shaded on Fig. 1.2. Describe the distribution of these companies.

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..... [2]

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(ii) Explain why high technology companies are usually located near to other similar companies.

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..... [3]

(iii) Table 1.1 (Insert) shows the percentage of companies in each industrial sector.
Use these results **to complete Fig. 1.5 below**. [2]

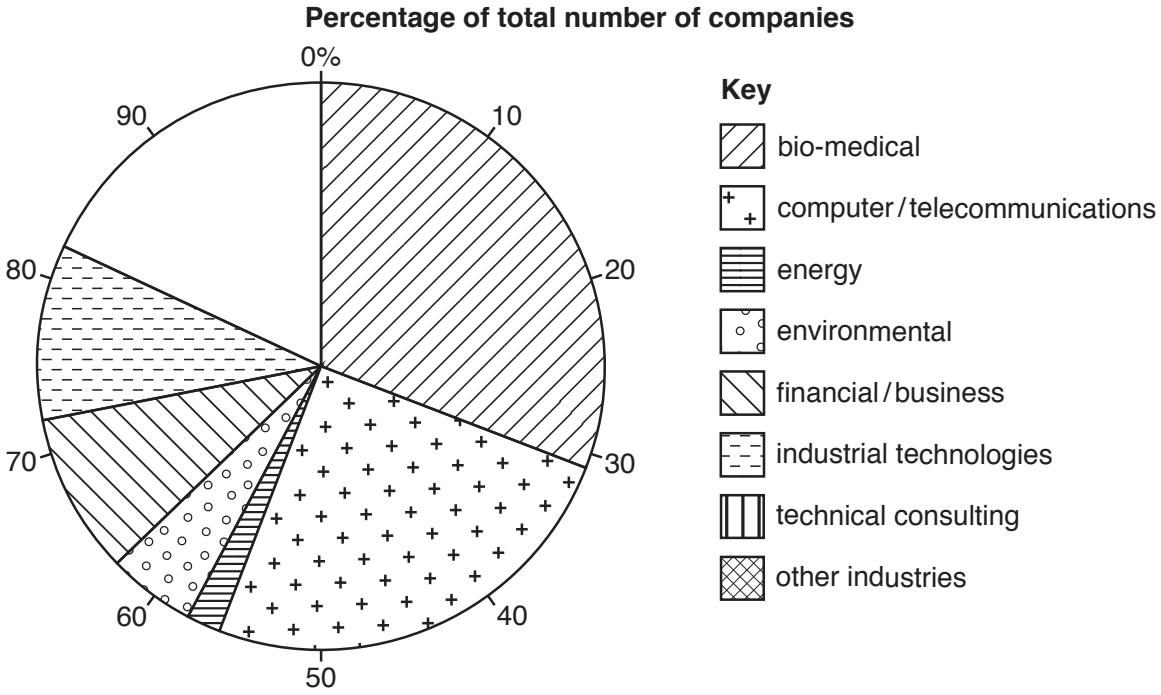


Fig. 1.5

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(c) To test **Hypothesis 1:** *The sectors (types) of high technology industry in the area changed between 2006 and 2016*, the students compared the results of their survey with those of a similar survey done 10 years earlier. The results of both surveys are shown in Table 1.2 (Insert).

(i) The students used the data in Table 1.2 to draw the graph, Fig. 1.6, below.
Complete the graph to show the changes in the number of bio-medical and computer/telecommunications companies. [2]

Changes in the number of companies in the high technology industrial sectors

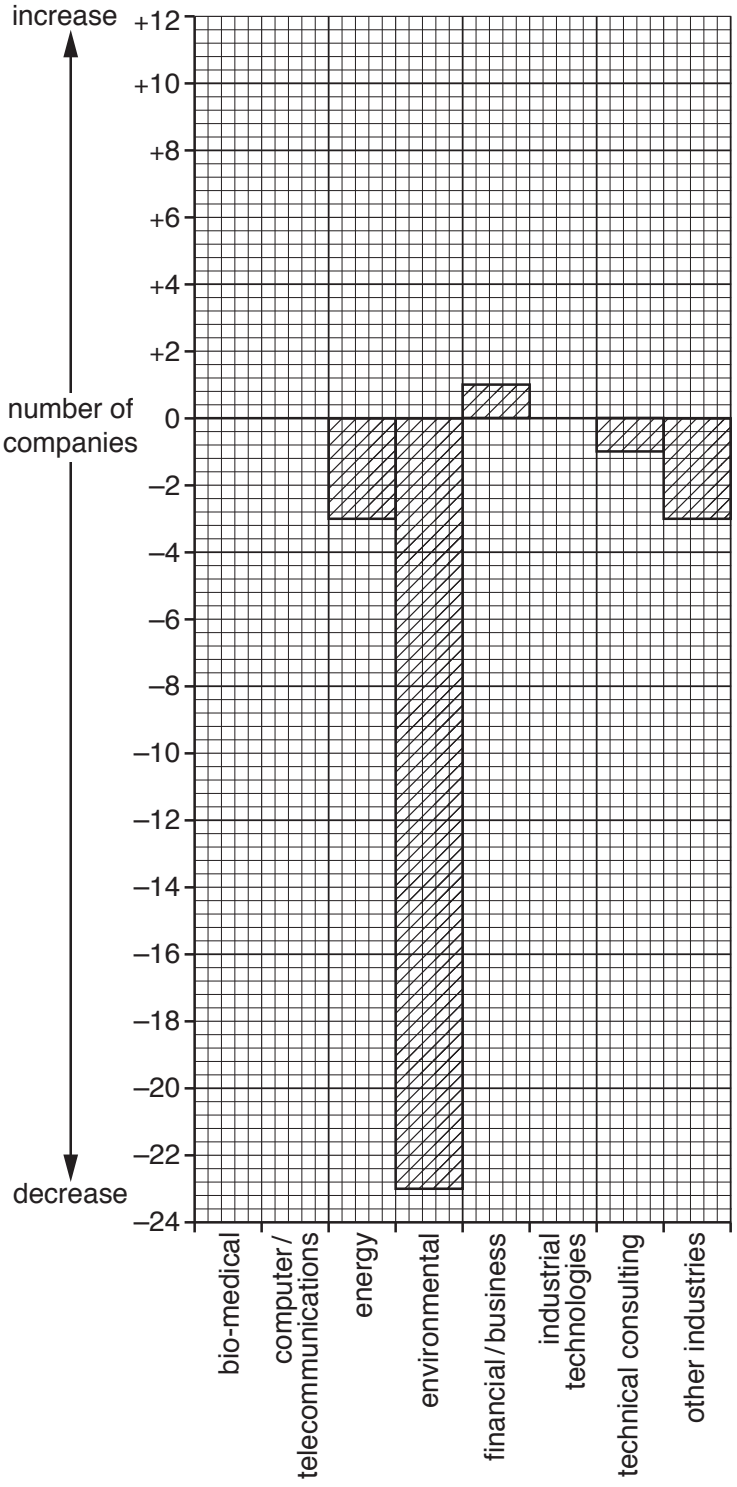


Fig. 1.6

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(ii) What conclusion would the students make about **Hypothesis 1:** *The sectors (types) of high technology industry in the area changed between 2006 and 2016*? Support your decision with evidence from Fig. 1.6 and Table 1.2.

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..... [4]

(iii) Companies in the 'other industries' sector shown in Table 1.1 include businesses such as a nursery (childcare centre), restaurant, and health club and gym.
Suggest **two** advantages for these companies of a location in this industrial area.

1 .....

.....

2 .....

..... [2]

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(d) To investigate **Hypothesis 2:** *High technology companies employ a highly skilled workforce*, the students used a questionnaire with 50 employees from different high technology companies. Their questionnaire is shown in Fig. 1.7 (Insert).

(i) The results of Question 1 (Which **one** of the following is your highest academic qualification?) are shown in Table 1.3 (Insert).

Use the results **to complete Fig. 1.8** below. [2]

Answers to Question 1. Which one of the following is your highest academic qualification?

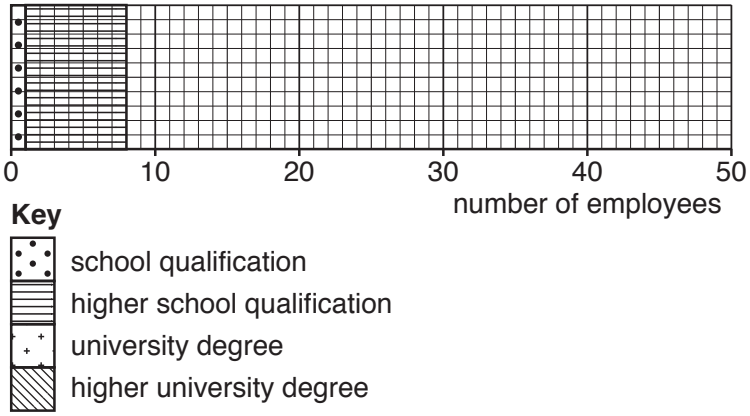


Fig. 1.8

(ii) The answers to Question 2 (Do you think your job is highly skilled?) are shown in Table 1.3 (Insert). The reasons these people gave to answer Question 3 (Why do you think your job is highly skilled?) are also shown in Table 1.3.

The students decided that **Hypothesis 2:** *High technology companies employ a highly skilled workforce*, was correct. How do the answers to Questions 1, 2 and 3 support this conclusion?

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..... [3]

(iii) Suggest **two** benefits which employees would give in answering Question 4 (What are the main benefits which you get from your job?).

1 .....

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2 .....

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[2]

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(e) Which **two** of the following are factors which attract high technology industries to an area? Tick your choices in the table below.

Location factor	Tick (✓)
Air pollution from the buildings will not affect local residents	
Links to universities in the local area	
Large quantities of raw materials nearby	
Near to the main market for the produce	
Road, rail and air transport links make the area accessible	

[2]

[Total: 30]

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2 Geography students from Bantry in south west Ireland did a weather investigation. They wanted to see if there was a link between atmospheric pressure and rainfall, and a link between wind direction and temperature.

The students agreed to investigate the following hypotheses:

Hypothesis 1: *Rainfall increases when atmospheric pressure rises.*

Hypothesis 2: *Temperature is affected by the direction from which the wind is blowing.*

(a) (i) The students used a computerised weather station to obtain data every three hours over a period of three days. Give **two** advantages of using electronic recording instruments.

1 .....

.....

2 .....

.....

[2]

(ii) Their teacher instructed the students to make some measurements using traditional instruments so they would understand how to use them.
Use arrows to match the weather feature with the correct measuring instrument in the table below. One has been completed for you.

Weather feature measured	Measuring instrument
Atmospheric pressure	Wind vane
Rainfall	Barometer
Temperature	Thermometer
Wind direction	Rain gauge

[2]

(iii) In the box below draw and label a traditional rain gauge.

[3]

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(iv) Describe and explain a good position to put a rain gauge to make sure that the data collected will be accurate.

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..... [4]

(v) Fig. 2.1 (Insert) shows a weather instrument. How does this instrument measure wind direction?

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..... [2]

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(b) The students' measurements of atmospheric pressure and rainfall are shown in Table 2.1 (Insert).

(i) Use data from Table 2.1 **to draw on Fig. 2.2 below the rainfall bar** for 07.00 on day 2 (measurement number 8). [1]

Atmospheric pressure and rainfall data

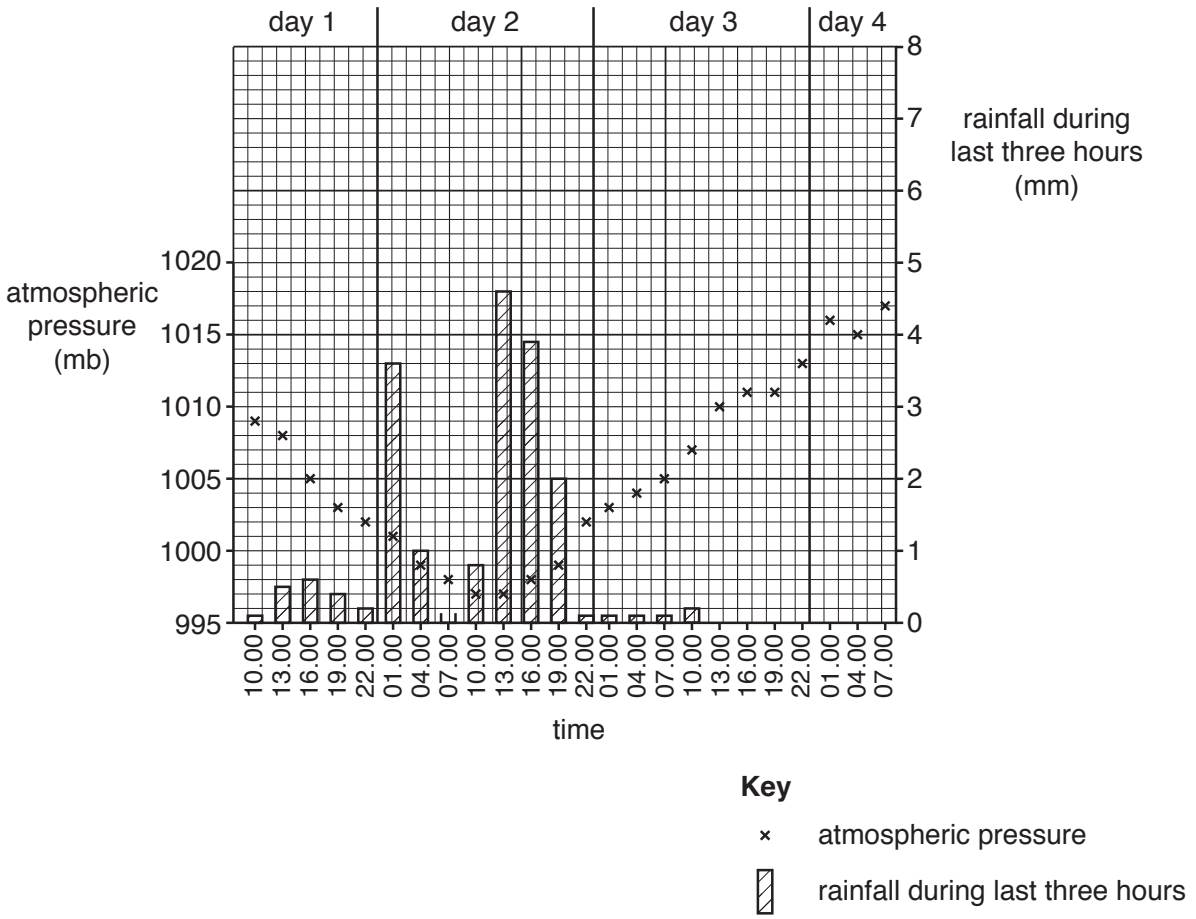


Fig. 2.2

(ii) Complete the table below to show the highest and lowest atmospheric pressure measurements recorded by the students.

Highest atmospheric pressure (mb)	Lowest atmospheric pressure (mb)

[1]

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(iii) Do the measurements shown in Fig. 2.2 and Table 2.1 support **Hypothesis 1:** *Rainfall increases when atmospheric pressure rises*?
Support your decision with data.

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..... [4]

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(c) The students' measurements of wind direction and temperature are shown in Table 2.2 (Insert).

(i) Use data from Table 2.2 **to plot on Fig. 2.3 below the temperatures** when the wind came from the east south east (ESE) direction. [2]

Temperature when wind came from different directions

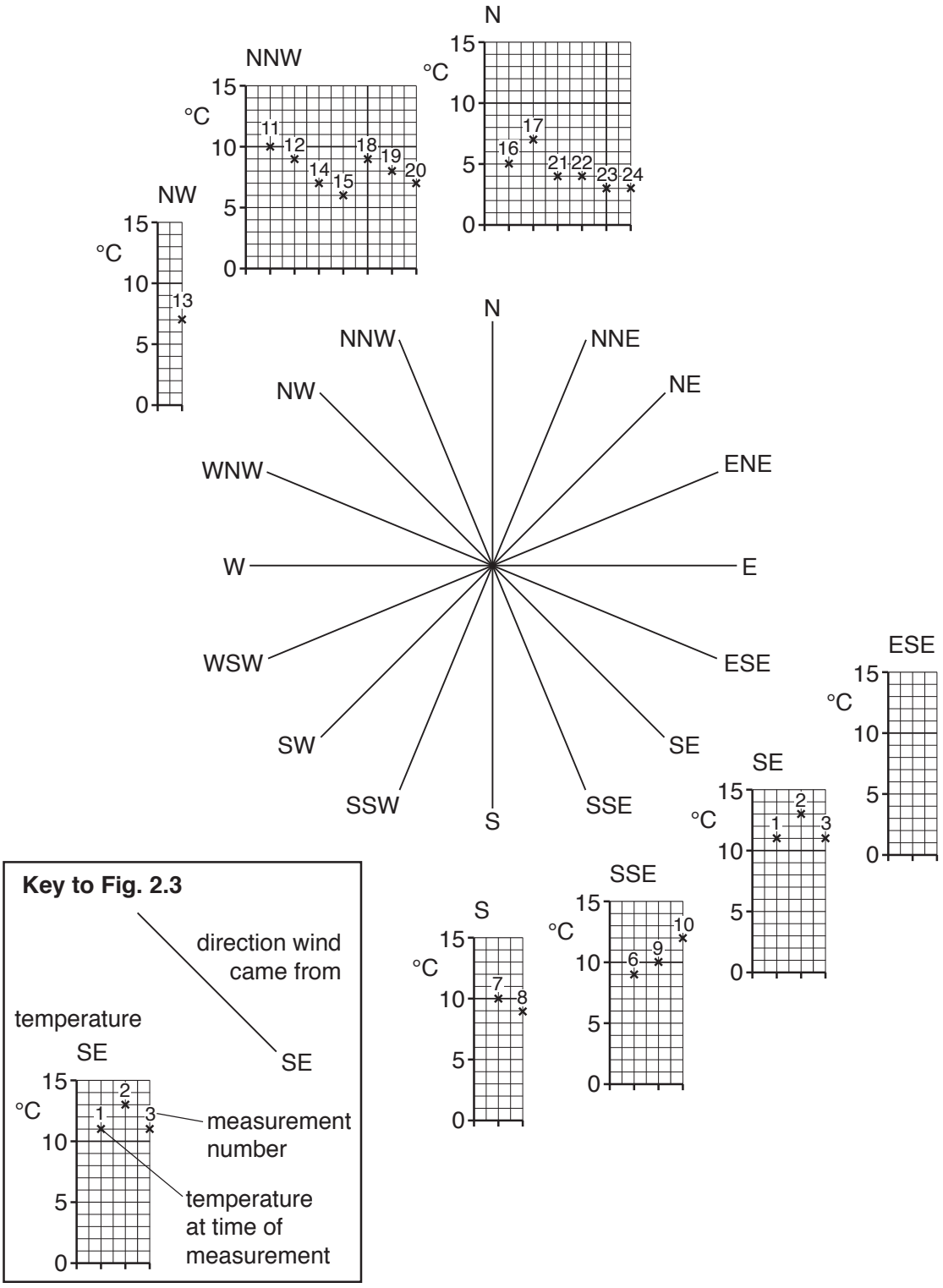


Fig. 2.3

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(ii) From which direction did the wind blow most frequently?

..... [1]

(iii) The students made the conclusion that **Hypothesis 2:** *Temperature is affected by the direction from which the wind is blowing* is true. Support this conclusion with data from Fig. 2.3 and Table 2.2.

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..... [3]

(d) Give **one** other weather element which the students could have measured to extend their fieldwork. (Do **not** write about temperature, rainfall, atmospheric pressure or wind direction.)

(i) Weather element ..... [1]

(ii) Describe how the students could collect data about the weather element named in **(i)** above.

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..... [4]

[Total: 30]

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Additional Pages

If you use the following lined pages to complete the answer(s) to any question(s), the question number(s) must be clearly shown.

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